

Honors Chemistry Quiz: Chapter 1

Name: KEY Period: Date:

This quiz is worth 50 points; each correct response is 2 points. Only those quizzes completed in black ink will be graded. Good luck!

1) Dalton's Atomic Theory states

A) that all elements have several isotopes.

B) that matter is composed of small indestructible particles.

B C) that the properties of matter are determined by the properties of atoms.

D) that energy is neither created nor destroyed during a chemical reaction.

E) that an atom is predominantly empty space.

2) Which of the following statements is TRUE?

A) A scientific law is fact. N

B) Once a theory is constructed, it is considered fact. N

E C) A hypothesis is speculation that is difficult to test. N

D) An observation explains why nature does something. N

E) A scientific law summarizes a series of related observations

3) Which of the following statements about crystalline and amorphous solids is TRUE?

A) A crystalline solid is composed of atoms or molecules arranged with long-range repeating order.

B) An example of a crystalline solid is glass. N - Amorphous

A C) An example of an amorphous solid is table salt (NaCl). N crystalline

D) An amorphous solid is composed of atoms or molecules with a majority of its volume empty.

E) All of the above statements are TRUE.

4) Which of the following statements about the phases of matter is TRUE?

A) In both solids and liquids, the atoms or molecules pack closely to one another.

B) Solids are highly compressible. N

A C) Gaseous substances have long-range repeating order. N

D) There is only one type of geometric arrangement that the atoms or molecules in any solid can adopt. N

E) Liquids have a large portion of empty volume between molecules.

5) According to the "particle model," differences between phases of matter can be explained by

A) the amount of energy each particle has.

B) the freedom of motion each particle possesses.

E C) increased translational movement by particles.

D) the amount of organization between particles.

E) All the above.

6) A substance composed of two or more elements in a fixed, definite proportion is

A) a homogeneous mixture.

B) a heterogeneous mixture.

C C) a compound.

D) a solution.

E) an alloy.

7) Two or more substances in variable proportions, where the composition is variable throughout are

A) a solution.

B) a homogeneous mixture.

E C) a compound.

D) an amorphous solid..

E) a heterogeneous mixture.

8) Which of the following are examples of a chemical change?

A) copper building materials develop a green patina over time ✓

B) a match burns ✓

C) ethanol evaporates ✓

D) Both A and B are examples of chemical change. ✓

E) All of the above are examples of chemical change.

9) A physical change

A) occurs when iron rusts.

B) occurs when sugar is heated into caramel.

D C) occurs when glucose is converted into energy within your cells.

D) occurs when water is evaporated. ✓

E) occurs when propane is burned for heat.

10) Which of the following statements about energy is FALSE?

A) Energy can be converted from one type to another.

B) The total energy of a system remains constant.

C C) Kinetic energy is the energy associated with its position or composition. ✓

D) Energy is the capacity to do work.

E) Systems tend to change in order to lower their potential energy.

11) All of the following are SI base units of measurement, EXCEPT

A) meter

B) gram

C) second

D) kelvin

E) mole

B

12) Which of the following are examples of extensive properties?

- A) mass
B) color
C) density
D) temperature
E) taste

A

13) Identify the common substance that has the lowest density.

- A) ice
B) aluminum
C) copper
D) table salt
E) sugar

A

14) If a solution has a temperature of 355 K, what is its temperature in degrees celsius?

- A) 165°C
B) 628°C
C) 179°C
D) 279°C
E) 82°C

E

$$\begin{array}{r} 355 \\ - 273 \\ \hline 82^{\circ}\text{C} \end{array}$$

15) Determine the density of an object that has a mass of 149.8 g and displaces 12.1 mL of water when placed in a graduated cylinder.

- A) 8.08 g/mL
B) 1.38 g/mL
C) 12.4 g/mL
D) 18.1 g/mL
E) 11.4 g/mL

C

$$d = \frac{\text{mass}}{\text{vol}} = \frac{149.8\text{g}}{12.1\text{mL}} = 12.4\text{g/mL}$$

16) Determine the volume of an object that has a mass of 455.6 g and a density of 19.3 g/cm³.

A) 87.9 mL

B) 42.4 mL

C) 18.5 mL

D) 23.6 mL

E) 31.2 mL

$$? \text{ Vol mL} = 455.6 \text{ g} \times \frac{\text{cm}^3}{19.3 \text{ g}} = 23.6 \text{ cm}^3$$

23.6 mL

17) A student performs an experiment to determine the density of a sugar solution. She obtains the following results: 1.71 g/mL, 1.73 g/mL, 1.67 g/mL, 1.69 g/mL. If the actual value for the density of the sugar solution is 1.40 g/mL, which statement below best describes her results?

A) Her results are precise, but not accurate.

B) Her results are accurate, but not precise.

C) Her results are both precise and accurate

D) Her results are neither precise nor accurate.

E) It isn't possible to determine with the information given.

18) What answer should be reported, with the correct number of significant figures, for the following calculation? $(433.621 - 333.9) \times 11.900$

A) 1.19×10^3

B) 1.187×10^3

C) 1.1868×10^3

D) 1.18680×10^3

E) 1.186799×10^3

$$\begin{array}{r} 433.621 \\ - 333.9 \\ \hline 99.721 \end{array} \times 11.900$$

$$1186.68$$

$$1.19 \times 10^3$$

19) What wavelength of light would you report in units of nm, if the light had a wavelength of $7.60 \times 10^{-10} \text{ m}$?

A) $7.60 \times 10^{-3} \text{ nm}$

B) $7.60 \times 10^{-19} \text{ nm}$

C) 1.32 nm

D) 0.760 nm

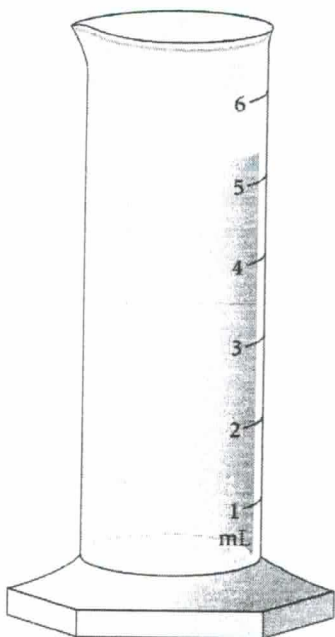
E) 760 nm

$$? \text{ nm} = 7.60 \times 10^{-10} \text{ m} \times \left(\frac{10^9 \text{ nm}}{\text{m}} \right)$$

$$= 7.60 \times 10^{-10} \times 10^9 = 7.60 \times 10^{-1}$$

or 0.760 nm

20) Read the water level with the correct number of significant figures.



- A) 5 mL
B) 5.3 mL
C) 5.32 mL
D) 5.320 mL
E) 5.3200 mL

21) How many significant figures are in the measurement, 20.300 m?

- A) 3
B) 4
C) 5
D) 1
E) 2

22) How many mg does a 433 kg sample contain?

A) 4.33×10^{-4} mg

B) 4.33×10^7 mg

C) 4.33×10^{-3} mg

D) 4.33×10^6 mg

E) 4.33×10^8 mg

$$? \text{ mg} = 433 \text{ kg} \times \frac{10^3 \text{ g}}{\text{kg}} \times \frac{10^3 \text{ mg}}{\text{g}} = 4.33 \times 10^8$$

23) How many cm^3 are contained in $3.77 \times 10^4 \text{ mm}^3$?

A) $3.77 \times 10^4 \text{ cm}^3$

B) $3.77 \times 10^1 \text{ cm}^3$

C) $3.77 \times 10^{-10} \text{ cm}^3$

D) $3.77 \times 10^{20} \text{ cm}^3$

E) $3.77 \times 10^6 \text{ cm}^3$

$$\begin{aligned} ? \text{ cm}^3 &= 3.77 \times 10^4 \text{ mm}^3 \times \left(\frac{1 \text{ cm}}{10 \text{ mm}} \right)^3 \\ &= 3.77 \times 10^4 \times 10^{-3} \text{ cm}^3 \\ &= 3.77 \times 10^1 \text{ cm}^3 \end{aligned}$$

24) If an object has a density of 8.65 g/cm^3 , what is its density in units of kg/m^3 ?

A) $8.65 \times 10^{-3} \text{ kg/m}^3$

B) $8.65 \times 10^{-7} \text{ kg/m}^3$

C) $8.65 \times 10^3 \text{ kg/m}^3$

D) $8.65 \times 10^1 \text{ kg/m}^3$

E) $8.65 \times 10^{-1} \text{ kg/m}^3$

$$\begin{aligned} ? \text{ kg/m}^3 &= 8.65 \text{ g/cm}^3 \times \frac{1 \text{ kg}}{10^3 \text{ g}} \times \left(\frac{10^2 \text{ cm}}{1 \text{ m}} \right)^3 \\ &= 8.65 \times 10^{-3} \times 10^6 \text{ kg/m}^3 \\ &= 8.65 \times 10^3 \text{ kg/m}^3 \end{aligned}$$

25) The symbol Si from the periodic table stands for which element?

A) Sulfur

B) Selenium

C) Strontium

D) Silicon

E) None of the above.